

Appl. No. 10/735,613
Amendment dated: August 2, 2006
Reply to OA of: May 2, 2006

REMARKS

This is in response to the Official Action of May 2, 2006. Applicants have amended the claims in order to more precisely define the scope of the present invention, taking into consideration the outstanding Official Action.

Specifically, Applicants have amended claim 6 to delete the phrase "wherein the permanent magnet ring consists of unit permanent magnets" and recite that each unit permanent magnet is a neodymium iron boron magnets that has a plated layer formed on the surface thereof. Claim 6 has also been amended to clarify that the N pole and S pole are formed during the time that the raw material of the neodymium iron boron magnet is molded. Further, claim 10 has been amended to removed the recitation of a plated layer formed on the unit permanent magnets and to recite that the transparent siliceous coating layer is formed over the plated layer formed on the surface of the unit permanent magnets. Applicants respectfully submit that these amendments to the claims are clearly supported by the specification as originally filed and are therefor in full compliance with the requirements of 35 U.S.C. §112.

Beginning with the comments set forth in paragraph 4 of the Official Action, Applicants note that the phrase "wherein the permanent magnet ring consists of unit permanent magnets" recited in claim 6 has been deleted from the claim. Applicants respectfully submit that it is now clear that the unit permanent magnets of the permanent magnet have a plated layer formed on the surface thereof.

With respect to the comments set forth in paragraph 5 of the Official Action, Applicants note that the line contact magnetic attraction of the flat shaped unit permanent magnets is clearly illustrated at, e.g., Figures 29, 30 and 31. These figures show that two flat shaped magnets come into contact at point R. Because point R actually runs down the entire length of the flat shaped magnets, there is line contact between the two flat shaped magnets. In other words, a line of contact is formed between the two flat shaped magnets at all the points R that run the length of curved edge of the flat shaped magnets. Accordingly, Applicants respectfully submit that the recitation in claim 9 of line contact is correct.

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Turning now to the prior art rejections set forth in the Official Action, Applicants respectfully submit the rejection of claims 6 and 8 under 35 U.S.C. §103(a) as being unpatentable over Sakurai et al. (JP 11-103915) in view of Takeshita et al. (US Pat. No. 4,981,532), the rejection of claims 7 and 9 under 35 U.S.C. §103(a) as being unpatentable over Sakurai et al. in view of Takeshita et al. and further in view of Yellen (US Pat. No. 6,427,486), and the rejection of claims 6-9 under 35 U.S.C. §103(a) as being unpatentable over Sakurai et al. (JP 11-103915) in view of Takeshita et al. and Yellen have each been obviated in light of the amendments to claim 6.

What each of the above rejections have in common is the exclusion of the subject matter recited in claim 10, thereby implying that neither Sakurai, Takeshita nor Yellen, either standing alone or taken in combination, disclose or suggest the subject matter recited in claim 10. Accordingly, since Applicants have amended claim 6 to recite subject matter from claim 10, specifically that a plated layer is formed on the surface of each unit permanent magnet, it is respectfully submitted that each of the above-listed rejections have been overcome. In light of this amendment, Applicants respectfully request that these rejections be withdrawn.

The rejection of claim 10 under 35 U.S.C. §103(a) as being unpatentable over Sakurai in view of Takeshita as applied to claim 6 and further in view of Hoffman (US Pat. No. 4,517,217) and the rejection of claim 10 under 35 U.S.C. §103(a) as being unpatentable over Sakurai in view of Takeshita and Yellen as applied to claim 6 and further in view of Hoffman have each been carefully considered but are most respectfully traversed in light of the following comments.

The primary reference relied upon in each of these rejections is the Sakurai reference. The Official Action urges that Sakurai discloses, in part, a permanent magnet ring formed by arranging a plurality of unit permanent magnets, wherein the unit permanent magnets are in the shapes recited in the instant claims and are uniaxial anisotropic magnets in which a N pole or a S pole is formed on one part of the side surface orthogonal to an easily magnetization direction and the S pole or N pole is

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formed on another part of the side surface opposite to said one part of the side surfaces. Applicants respectfully traverse this rejection.

Applicants respectfully submit that Sakurai fails to disclose or suggest a uniaxial magnet as claimed in the instant application. It is noted that Figure 1 of Sakurai illustrates a plurality of spheres which are comprised of a cylindrical magnet 2 and nonmagnetic matter 1. Figure 3(a) illustrates a slightly enlarged version of the spheres shown in Figure 1 in combination with a sphere 5 that is made up entirely of magnetic material. As can be seen most clearly in Figure 3(a), the magnetic portion 2 of the sphere is divided into two section by a line drawn in the middle of the magnetic portion 2. The letter 'N' is written in the middle of the left-hand section of the magnetic material, and the letter 'S' is written in the middle of the right-hand section. Sphere 5 is demarcated in a similar fashion. Applicants respectfully submit that these Figures clearly indicate that the whole of each half of the magnetic material is magnetized as either a N pole or a S pole, rather than only in a uniaxial direction as claimed in the instant application. In other words, everywhere in the half of the magnetic material marked with an N is the N pole and everywhere in the half of the magnetic material marked with S is the S pole. Because of this configuration, the magnets of Sakurai cannot be properly interpreted as uniaxial magnets. The N pole and S pole of the magnets are everywhere within their respective halves, as opposed to only be located along a single axis at opposite ends of the magnetic material.

This interpretation of Sakurai is further supported by the specification of Sakurai. For example, paragraph [0005] states "One side serves as N pole and ... another side serves as the south pole", indicating that one entire side of the magnet is either a North pole or a South pole. Further, paragraph [0008] states "The magnet ball 5 whose whole is a magnet...", indicating that the North or South poles of the magnet are located all throughout one half of the magnet, and not at just one point on the same axis.

To the contrary, the presently claimed invention clearly recites a uniaxial magnet where the N pole is formed on one part of the side surface and the S pole is formed on one part of the side surface opposite to the N pole and along the same axis. This

feature is clearly illustrated in the Figures of the instant application. For example, Figure 6 illustrates a N pole and a S pole along the same single axis at opposite ends of the unit permanent magnet. The placement of the letter 'N' and the letter 'S' close to the edges of the sphere indicate that the poles are located only at those points, and not throughout the entire unit magnet. This may be contrasted with the placement of the letter 'N' and the letter 'S' in the Figures of Sakurai, wherein the letters are placed in the middle of their respective halves. Figures 15(a) and 16(a) of the instant application also show how the N and S poles are only located at parts of the unit permanent magnets that are on a single axis at opposite ends.

This feature may perhaps be seen most clearly in Figure 28, where a point at the edge of the sphere is labeled N at a point at the edge of an adjoining sphere is labeled S. The largest arrow between the exact point of the S pole and N pole indicates the strong magnetic attraction. The smaller arrows above and below the large arrow indicate lesser magnetic attraction that occurs around the periphery of the point where the N and S poles are. If the N and S poles were located throughout the sphere, as in Sakurai, then there would be additional magnetic attraction that would be represented by additional arrows. However, since the magnetic attraction is only coming from the N and S poles that are located at a single part at the edge of the sphere, only arrows from these points are illustrated.

Ultimately, in reciting a uniaxial magnet, the present invention is directed to unit permanent magnets with poles formed only at specific curved surfaces on the same axis and at opposite sides of the unit permanent magnet. As a result, the magnets have strong attracting force at the specific part of the unit magnet so that the magnets are easily kept in a ring shape without any magnets slipping off or becoming disjointed. This is in contrast to the magnets of Sakurai, which have poles located all over the magnet and not just at specific parts on the same axis.

In light of the above discussion, Applicants respectfully submit that, contrary to the assertion in the Official Action, Sakurai fails to disclose or suggest unit permanent magnets that are uniaxial anisotropic magnets.

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Further, Applicants respectfully submit that none of the secondary prior art references relied upon in support of the §103(a) rejections remedy this deficiency in Sakurai. The Official Action relies upon Takeshita as disclosing rare earth-iron boron magnets, including Nd-Fe-Br magnets. The Yellen reference is relied upon as disclosing forming unit permanent magnets for a bracelet such that they consist of permanent magnetic material to provide strong magnetic bonding. Hoffman is relied upon as disclosing a transparent abrasion resistant film formed over articles previously plated with gold. Applicants respectfully submit that none of the secondary prior art references disclose a uniaxial anisotropic magnet as claimed in the instant application.

Accordingly, as none of the prior art references, either standing alone or taken in combination, disclose or suggest every element recited in claim 6, and specifically a uniaxial anisotropic magnet, Applicants respectfully submit that a *prima facie* case of obviousness according to the guidelines set forth in MPEP §2143 has not been established and should therefore be withdrawn.

Moreover, because claims 7-10 depend from claim 6, Applicants respectfully submit that these claims are also patentable over the references of record for all of the reasons discussed above with respect to the rejection of claim 6. Accordingly, Applicants respectfully request that the rejection of claims 7-10 also be withdrawn.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all of the claims now present in the application are most respectfully requested.

Respectfully submitted,
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August 2, 2006